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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/540,461	06/22/2005	Horst Vestweber	09931-00042-US	2766

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EXAMINER	
NELSON, MICHAEL E	

ART UNIT	PAPER NUMBER
4174	

MAIL DATE	DELIVERY MODE
01/04/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/540,461	VESTWEBER ET AL.	
	Examiner	Art Unit	
	MICHAEL E. NELSON	4174	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *06/22/2005,11/01/2005,11/21/2005,11/01/2007*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 101

1. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claim 10 is rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd.* v. *Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim10 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. Claim 10 provides for the use of the compounds of claim 9, but, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

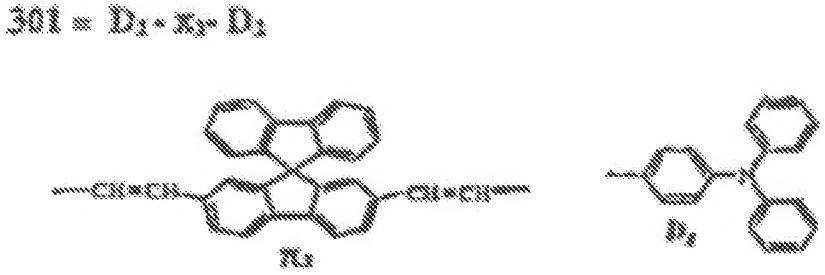
Claim Rejections - 35 USC § 102

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claim 9 is rejected under 35 U.S.C. 102(b) as being anticipated by Huang et al. (Polymer Preprints, vol. 43, no.1, pp.147-148, 2002.

6. Concerning claim 9, Huang et al. describe the compound shown below, specifically compound 301, which contains the core π_3 with two substituents D_2.

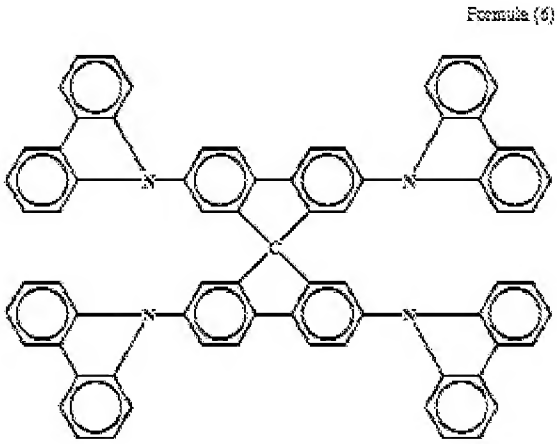


7. This compound meets the limitations of claim 9 where n = 0, o = 1, Ar^1 is phenyl, Ar^2 and Ar^3 are both phenyl, m = 1, and X = 0 or 1, and the sum of all indices x is 2.

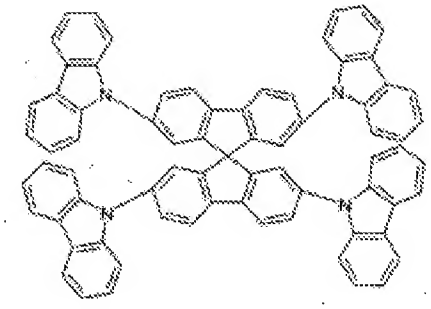
8. Claim 1, 3, 7 and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Nishi et al. (US 2002/0034659).

9. Concerning claim 1, Nishi et al. describe an organic electroluminescent device with an emitting layer comprising spiro-CBP (formula (6)) (hole transporting spiro-9,9'-

bifluorene compound, shown below) and $Ir(ppy)_3$ as the luminescent material, where the luminescent material is present in a concentration 5-10 wt. %. (Embodiment 1, [0051])



10. Concerning claims 3, Nishi et al. describe the organic electroluminescent device discussed above. The compound shown (spiro-CBP), has a carbazole substituent, and has a HOMO level between 4.8 eV to 5.8 eV, since it is identical to the compound shown on page 8 of Applicant's specification (shown below for comparison) as a preferred hole conductor.



11. Concerning claim 7, Nishi et al. describe the organic electroluminescent device discussed above. The compound shown (spiro-CBP), has a glass transition

temperature of greater than 90°C, since it is identical to the compound shown on page 8 of Applicant's specification as a preferred hole conductor.

12. Concerning claim 11, Nishi et al. describe an organic electroluminescent device discussed above, where the light emitting layer is formed by coevaporation (sublimation). [0051]

13. Claims 12-16 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Nishi et al. (US 2002/0034659).

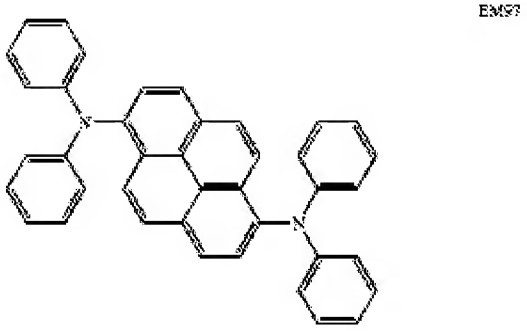
14. Concerning claims 12-16, Nishi et al. describes the electroluminescent device discussed above, including the light-emitting layer (organic layer) comprising a mixture of a hole transporting compound spirofluorene compound and a light emitting compound, as discussed above. As stated in the MPEP 2113:

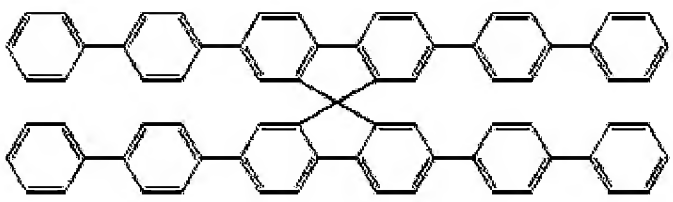
15. "Product-by-process claims are not limited to the manipulations of the recited steps, only the structure implied by the steps."

16. The structure of the device produced by Nishi et al. by a sublimation method, appears on its face to be identical to a device which would be produced by the Applicant's methods, since all of the methods would produce the light-emitting layer described above.

17. Claims 1-2, 5-6, 11 are rejected under 35 U.S.C. 102(e) as being anticipated by Matsuura et al. (US 2005/0064233).

18. Concerning claim 1-2, Matsuura et al. describe organic electroluminescent devices where the light emitting layer comprises a mixture of (A) a specific triarylamine compound (hole conductor), and (B) at least one compound including spirofluorene (spiro-9,9'-bifluorene, emission material) derivatives. (abstract) Matsuura et al. specifically describe devices composed of the following triarylamine (EM97) with the following spirofluorene derivative (EM42). (Example 16, Table 1-1). The ratio between the two materials A:B is 3:40, which corresponds to 7.125:95 (per claims 5-6) ([0148]). Matsuura et al. do not report the HOMO level of the hole conductor material, but the HOMO level is an inherent property of the material itself. Triarylamines are well known hole transporting compounds, and it would be predicted that the HOMO level of the triarylamine compounds described by Matsuura et al. would fall in the same region, generally between 4.8 and 5.8 eV.





19. Concerning claims 11, Matsuura et al. describe the electroluminescent device discussed above, where the layers are formed by vapor deposition (sublimation). However, as stated in the MPEP 2113

20. Applicant cannot rely upon the foreign priority papers to overcome this rejection because a translation of said papers has not been made of record in accordance with 37 CFR 1.55. See MPEP § 201.15.

21. Claim 8 is rejected under 35 U.S.C. 102(e) as being anticipated by Matsuura et al. (US 2005/0064233) with evidence of inherency supplied by Salbeck et al. (Synthetic Metals, vol. 91, pp 209-215, 1997).

22. Concerning claim 8, Matsuura et al. describe the organic electroluminescent device discussed above, but do not report the glass transition temperature of the emission material. The glass transition temperature is an inherent property of the material, and is reported by Salbeck et al.. The material shown above corresponds to compound Spiro-6Φ in table 1, with a glass transition temperature of 212°C. (table 1, page 213)

23. Claims 12-16 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Matsuura et al. (US 2005/0064233).

24. Concerning claims 12-16, Matsuura et al. describes the electroluminescent device discussed above, including the light-emitting layer (organic layer) comprising a

mixture of a hole transporting compound and a spirofluorene emitting compound, as discussed above. As stated in the MPEP 2113:

25. "Product-by-process claims are not limited to the manipulations of the recited steps, only the structure implied by the steps."

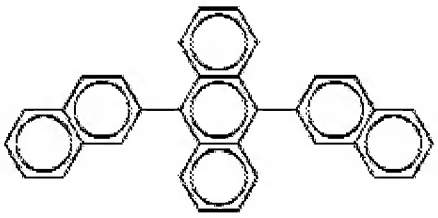
26. The structure of the device produced by Matsuura et al. appears on its face to be identical to a device which would be produced by the Applicant's methods, since all of the methods would produce the light-emitting layer described above.

Claim Rejections - 35 USC § 103

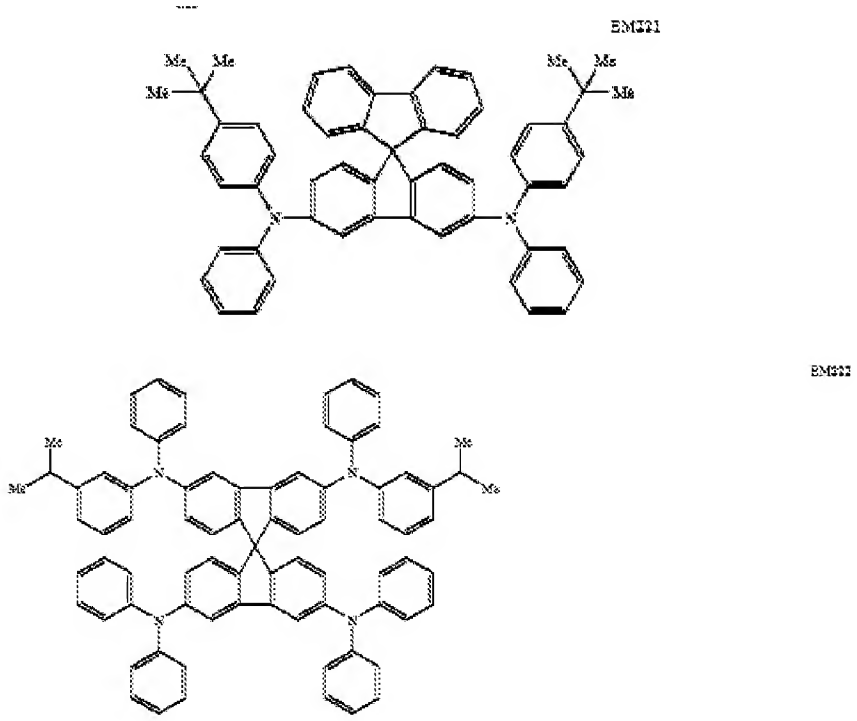
27. Claims 3-4 rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuura et al. (US 2005/0064233).

28. Concerning claims 3, Matsuura et al. describe organic electroluminescent comprising a mixture of triarylamine compounds and anthracene derivatives such as EM27 shown below ([0089], and example 6, Table 1-1)

EM27



29. Matsuura et al. are silent on the use of spirofluorene triarylamine compounds as the hole transporting material in the mixture, but do disclose other triarylamine compounds, such as the compounds EM221 and EM222 shown below.



30. Given the general teaching, it would have been obvious to one of ordinary skill in the art to use the spirofluorene triarylamine compounds with the anthracene compound shown above in the device described by Matsuura et al. since the device would be predicted to function in the same manner.

31. Concerning claim 4, Matsuura et al. describe the electroluminescent device discussed above, but are silent on the use of a spirobifluorene hole transporting compound in the device. Matsuura et al. do describe other triarylamine compounds suitable for their device, including the spirofluorene triarylamines (EM221 and EM222) shown above.

32. Given the teaching, it would have been obvious to one of ordinary skill to use the spirofluorene triarylamine compound with the spirofluorene emission compound in the

device described by Matsuura et al., since the resulting device would be predicted to function in the same manner.

33. Claims 1-2 and 4-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aziz et al. (6,392,339) in view of Salbeck et al. (Synthetic Metals, vol. 91, pp 209-215, 1997).

34. Concerning claims 1 and 5-6 Aziz et al. describe an organic light emitting device which includes a mixed region (organic layer, per claim 16) composed of a mixture of a hole transport material and an electron transport material, one of which is an emitter. (abstract)

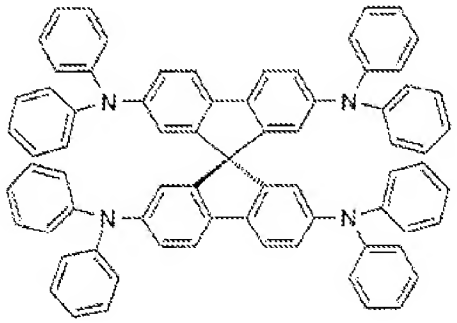
35. Concerning claims 5-6, Aziz et al. describe the electroluminescent device discussed above, and disclose that the ratio between the hole transport material and electron transport material should be between 10:90 and 90:10 (column 9, lines 34-36).

36. The ratio of the two materials is an optimizable feature, and it would have been obvious to one of ordinary skill in the art to optimize the ratio between the two materials, as described by Aziz et al. to optimize the performance of the device.

37. Aziz et al. are silent on the use of spirofluorene compounds as the hole transporting or electron transporting materials, but do disclose preferred classes of hole transporting materials including N,N'-diphenyl-N,N'-bis(3-methylphenyl)1,1'-biphenyl-4,4'-diamine (TAD). (column 7, lines 14-15)

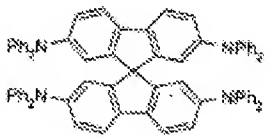
38. Salbeck et al. describe spiro-linked compounds for blue electroluminescence with high glass transition temperatures, including a hole transporting analog of well known

hole transport material TAD, called spiro-TAD, shown below, with a higher glass transition temperature than TAD. Salbeck et al. discloses that electroluminescent devices with compounds with higher glass transition temperatures result in improved stability and performance.



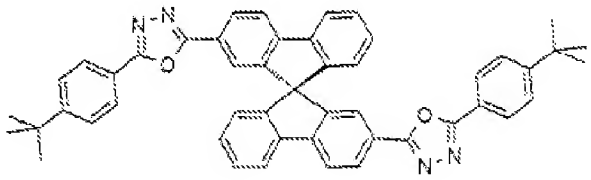
spiro-TAD

39. The HOMO level of spiro-TAD falls between 4.8 and 5.8 eV, since it is identical to the compound shown on page 8 of Applicant's specification as a preferred hole conductor, shown below for comparison.



40. Concerning claims 1, given the teaching by Salbeck et al. of a hole transporting analog to TAD with a higher glass transition temperature compared to TAD, it would have been obvious to one of ordinary skill in the art to use the spirofluorene based hole transport compound described by Salbeck et al. in an electroluminescent device described by Aziz et al. since the resulting device would be predicted to function in the same manner.

41. Concerning claim 2-4, Salbek et al. further disclose electron transporting spirofluorene compounds such as spiro-PBD shown below. (page 211).



spiro-PBD

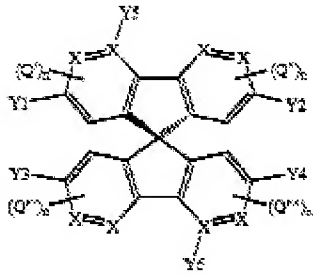
42. Salbeck et al. describe an a organic electroluminescent device comprising a hole transport layer of spiro-TAD and an electron transport layer of spiro-PBD, which produced blue electroluminescence (page 214). By definition, one of the two compounds must be luminescent.

43. Given the teaching by Aziz et al. of an electroluminescent device comprising a light emitting layer of a mixture of a hole transporting material and an electron transporting material, and the teaching by Salbeck et al. of both a hole transporting, and electron transporting spirofluorene compound, it would have been obvious to one of ordinary skill in the art to use the spirofluorene compounds in a device described by Aziz et al., since the resulting device would be predicted to function in the same manner.

Double Patenting

44. Claims 1-16 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1 and 8 of U.S. Patent No. 6,911,551. Although the conflicting claims are not identical, they are not patentably distinct from

each other because patent 6911551 claims an organic electroluminescence device which comprises the material of claim 1 (a spiro-9,9'-bifluorene compound) shown below. Since the patent is not restricted as to the location of this compound (in a non-emissive layer), the scope of the claims overlaps.



Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL E. NELSON whose telephone number is (571)270-3453. The examiner can normally be reached on M-F 7:30am-5:00pm EST (First Friday Off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, D. Lawrence Tarazano can be reached on 571-272-1515. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/D. Lawrence Tarazano/
Primary Examiner, Art Unit 4174

Michael E. Nelson
Examiner
Art Unit 4174